

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

4197-102

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/787314

INTERNATIONAL APPLICATION NO.

PCT/DE99/02977

INTERNATIONAL FILING DATE

14 September 1999

PRIORITY DATE CLAIMED

17 September 1998

TITLE OF INVENTION

METHOD FOR PRODUCING CELLULOSIC FORMS

APPLICANT(S) FOR DO/EO/US

Ralf-Uwe Bauer, Frank-Günter Niemz

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).*(**Unsigned**)
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A small entity statement.
16. ☐ Other items or information:

NOTE: This application is being filed without an Oath or Declaration under the provisions of 37 CFR § 1.53 in order that applicants may secure a filing date of March 14, 2001. Upon receipt of a "Notice to File Missing Parts - Filing Date Granted," a Declaration and Power of Attorney, and an Assignment in favor of applicants' assignees, Alceru Schwarza GmbH will be filed in the Patent and Trademark Office. The undersigned agent affirmatively states that he has been duly authorized and appointed to file this application on behalf of the applicants and applicants' assignees, and that the Declaration and Power of Attorney to be filed hereafter will confirm the undersigned agent's authorization and appointment. Alceru Schwarza GmbH is a small business entity within the meaning of 37 CFR § 1.9.

17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS		PTO USE ONLY	
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO\$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482)\$0.00 No International preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))\$0.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO\$1000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)\$0.00 ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 860.00			
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$			
Claims	Number Filed	Number Extra	Rate				
Total Claims	-20 =	0	X \$18.00	\$			
Independent Claims	- 3 =	0	X \$80.00	\$			
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$			
TOTAL OF ABOVE CALCULATIONS =				860.00			
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				\$ 430.00			
SUBTOTAL =				\$ 430.00			
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 Months from the earliest claimed priority date (37 CFR 1.492(f)).				\$			
TOTAL NATIONAL FEE =				\$ 430.00			
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$			
TOTAL FEE ENCLOSED =				\$ 430.00			
				Amount to be:		\$	
				refunded			
				Charged		\$	

- a. ☒ A check in the amount of \$430.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-3284. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not yet been met, a petition to revive (37 CFR 1.127(a) or (b)) must be filed and granted to restore the application to pending status.

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4197-102
PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Ralf-Uwe Bauer et al.

Application No.: New U.S. National Stage Application of
PCT International Application No.
PCT/DE99/02977

International Filing Date: 14 September 1999

Priority Date Claimed: 17 September 1998 (German Appl. No. 198 42
557.0)

U.S. National Phase Filing Date: Date of mailing identified below

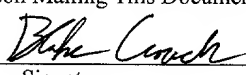
Title: **METHOD FOR PRODUCING
CELLULOSIC FORMS**

EXPRESS MAIL CERTIFICATE

I hereby certify that I am mailing the attached documents to the
Commissioner for Patents on the date specified, in an envelope
addressed to the Commissioner for Patents, Washington, DC
20231, and Express Mailed under the provisions of 37 CFR
1.10.

Blake Crouch

Name of Person Mailing This Document



Signature

March 14, 2001

Date

EL647805458US

Express Mail Label Number

PRELIMINARY AMENDMENT

Commissioner for Patents
BOX PATENT APPLICATION
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified new national phase patent application, please amend the application, as follows:

In the Specification

On page one (1) of the specification please delete "Process for producing formed cellulosic articles"

In the Claims

Amend claims 1-11, as follows:

1. A process [Process] for producing formed cellulosic articles, particularly fibres and filaments, comprising:

a) dissolving cellulose in an aqueous solution of [a tertiary amine oxide, especially] N-methylmorpholine N-oxide, and

b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said cellulose solution and/or said precipitation bath containing a tenside,

characterized in that in the step b) the tenside content c of the cellulose solution and/or of the precipitation bath is in the range $100 \text{ ppm} > c \geq 5 \text{ ppm}$, and the width of the air gap is in the range from 2 to 20 mm.

2. The process [Process] according to claim 1 [characterized in that] wherein the tenside content c is in the range from 8 to 70 ppm.

3. The process [Process] according to claim 1 [or 2 characterized in that] wherein the tenside content c in the cellulose solution is in the range $70 \text{ ppm} > c \geq 30 \text{ ppm}$.

4. The process [Process] according to claim 1 wherein [any of the claims 1 to 3 characterized in that] the width of the air gap is in the range from 2 to 8 mm.
5. The process [Process] according to claim 1 wherein [any of the claims 1 to 4 characterized in that] the distance of the solution jets from each other at the exit of the extrusion die is in the range from 0.22 to 0.7 mm.
6. The process [Process] according to claim 1 wherein [any of the claims 1 to 5 characterized in that] the tenside is added to the cellulose at a time selected from the group consisting of before the stage a), [to the cellulose or] in the stage a), and [or] between the stages a) and b).
7. The process [Process] according to claim 1 wherein [any of the claims 1 to 5 characterized in that] the tenside is added to the cellulose at a time selected from the group consisting of in stage b), and [or] after the stage b).
8. The process [Process] according to claim 1 wherein [any of the claims 1 to 7 characterized in that] a non-ionogenic tenside is used.
9. The process [Process] according to claim 1 wherein [any of the claims 1 to 8 characterized in that] the precipitation bath from the stage b) is regenerated to a purified aqueous amine oxide which is reused in the stage a).
10. The process [Process] according to claim 9 wherein [characterized in that] the tenside is separated from the amine oxide solution in the course of the regeneration of the precipitation bath, and is reused in the stage b).
11. The process [Process] according to claim 1 wherein [any of the claims 1 to 10 characterized in that] the cellulose solution is extruded through a die having a hole density in the range from 1.8 to 20 mm⁻².

Please add the following claims 12-18:

12. A process for producing formed cellulosic articles, particularly fibres and filaments, comprising:

a) dissolving cellulose in an aqueous solution of a tertiary amine oxide, and

b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said cellulose solution containing a tenside in a range from about 10 ppm to about 50 ppm.

13. The process according to claim 12 further comprising a tenside in the precipitation bath.

14. The process according to claim 12 wherein the width of the air gap is in the range from 2 to 20 mm.

15. The process according to claim 12 wherein the tertiary amine oxide is N-methylmorpholine N-oxide

16. A process for producing formed cellulosic articles, particularly fibres and filaments, comprising:

a) dissolving cellulose in an aqueous solution of a tertiary amine oxide, and

b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said precipitation bath containing a tenside,

characterized in that in the step b) the tenside content of the precipitation bath is in the range from about 10 ppm to about 30 ppm.

17. The process according to claim 16 wherein the width of the air gap is in the range from 2 to 20 mm.
18. The process according to claim 16 wherein the tertiary amine oxide is N-methylmorpholine N-oxide

REMARKS

A replacement page for page 1 and a set of claims amended to date are included herewith in Appendix A and B respectively.

It is requested that the examination and prosecution of this application proceed on the basis of the English translation of the PCT International application included herewith and these amended claims 1-18.

Respectfully submitted,



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The invention relates to a process for producing formed cellulosic articles, particularly fibres and filaments, comprising a) dissolving cellulose in an aqueous solution of a tertiary amine oxide, especially N-methylmorpholine N-oxide, and b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said cellulose solution and/or said precipitation bath containing a tenside.

It is known that with the fibre spinning the risk of mutual contact of the solution jets in the air gap and the danger for the fibres of sticking together is the greater the longer the distance of the spinneret from the precipitation bath surface is. This tendency can be counteracted by decreasing the hole density of the spinneret whereby however the economical efficiency is impaired. From spinning fibres with a great air gap width it is known to obviate this sticking risk by additions to the dope and to improve the spinnability. From DD 218 121 the addition of polyalkylene ether to the cellulose solution is known with air gap widths of 150 mm. According to DD 286 001 a tenside is added when preparing the dope in order to improve the uniformity and the fineness of the thread. From WO 95/16063 a spinning process is known in which tensides are added to the precipitation bath and/or to the dope in order to reduce the fibrillation tendency of the spun fibres. With this process the tenside concentration in the precipitation bath is at least 100 ppm by mass and in the dope is at least 250 ppm by mass. The air gap width amounts to 40 mm.

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It is known to carry out the spinning process with smaller widths of the air gap in order to avoid the disadvantages arising with broad air gap widths, and to increase the hole density of the spinneret. Thus, from EP 0 574 870 the spinning of cellulose fibres according to the amine oxide process with stretching the solution jets in an air gap of a width in the range from 2 to 20 mm is known in which the fibres are drawn off through a spinning funnel. With these small gap widths it is found that with decreasing gap width particular textile physical properties of the spun fibres are impaired, and carding results in unsatisfactory products. The consequence is that the decrease of the gap width which is desired per se, is limited by impairing the product properties.

The object of the invention is to provide a process for producing cellulosic formed articles according to the amine oxide process in which the above-mentioned impairments of the product properties caused by narrowing the air gap are avoided. Particularly the air gap width should be diminished compared with known processes without inducing deteriorations or greater fluctuations of particular textile physical properties of the spun fibres or filaments. The aim of the process is also an increase of the hole density without causing sticking of the capillaries together while passing the air gap. Finally the spun fibres should show a better suitability for carding.

With the process mentioned at the beginning these objects are achieved according to the invention in that in the step b) the tenside content c of the cellulose solution and/or of the precipitation bath is in the range from $100 \text{ ppm} > c \geq 5 \text{ ppm}$ by mass, and the width of the air gap is in the range from 2 to 20 mm. Surprisingly we have found that with the tenside addition of the invention the air gap width can be considerably reduced without deterioration of the quality of the fibres/filaments or other

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formed articles. The minimum gap width at which a deterioration of the textile physical properties is not yet observed, can be reduced by approximately 33 to 50 %, for example from 6 mm to 3 mm.

Preferably the cellulose solution is extruded through a die having a hole density in the range from 1.8 to 20 mm⁻². Especially the hole or bore density of the spinneret is in the range from 2.0 to 15 mm⁻². Compared with the process according to EP 0 574 870 a considerable increase of the hole density with the same air gap width can be achieved without impairing the fibre properties.

According to a preferred embodiment of the process of the invention the tenside content c is in the range from 8 to 70 ppm. Especially the cellulose solution has a tenside content c in the range from $70 > c \geq 30$ ppm. The width of the air gap is preferably in the range from 2 to 8 mm. The distance of the solution jets from each other at the exit of the forming die or the spinneret can be likewise reduced. It is preferably in the range from 0.22 to 0.70 mm, especially at 0.5 to 0.6 mm. Consequently the productivity can be enhanced.

According to the preferred embodiment of the process of the invention the tenside is added before the stage a) to the cellulose or in the stage a) or between the stages a) and b). Therefore the tenside can be already introduced in the steps of the pulp preparation or the formation of the dope. The tenside can be simultaneously added with the addition of other auxiliary agents which are to be introduced into the process anyway, such as stabilisers.

With another embodiment of the process the tenside is added after the step b). For example the tenside can be sprayed into the air gap between the forming die and the precipitation bath in the form of aerosols. The tenside can be added to the preci-

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precipitation bath itself or when regenerating this bath.

Preferably a non-ionogenic tenside is used. Suitable non-ionogenic tensides are e.g. fatty acid or fatty alcohol polyether-oxides and saccharosester of fatty acids. Suitable anionic tensides are e.g. fatty acid amine compounds or fatty acid alkylamine compounds, fatty acid glyceride sulfate, N-(C₁₀₋₂₀-acyl)sarcosine salts, fatty acid sulfosuccinates and fatty acid amidesulfosuccinates, fatty alcohol sulfates and the ethoxilated derivatives of these compounds. Cationic tensides which are suitable, are e.g. quaternary C₁₀₋₂₀-alkylammonium compounds. Suitable amphoteric tensides are e.g. N-(C₁₀₋₂₀-alkyl)-β-aminopropionates and fatty acid imidazoline derivatives.

Preferably the precipitation bath from the stage b) is regenerated to form a purified aqueous amine oxide which is reused in the stage a). With this, the tenside in the precipitation bath can be likewise recycled if it is stable under the chemical and thermal conditions of the regeneration and the stage a). If not, the added tenside can be separated from the amine oxide solution in the course of the regeneration of the precipitation bath and reused in step b). The method used for the separation depends inter alia on the type of the tenside. The separation can be carried out e.g. with the aid of an ion exchange membrane, a reverse osmosis membrane or by water vapor distillation. If the tenside is recycled together with the amine oxide it must not promote starting the amine oxide decomposition or the cellulose degradation, and not lower the temperature at which this begins. Furthermore, the dissolving capability of the amine oxide or its hydrate for cellulose should not be reduced.

The process of the invention will now be explained by the examples and the comparative examples.

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Comparative Example 1

A 12% cellulose solution in N-methylmorpholine N-oxide monohydrate (NMMO-MH) was spun at a temperature of 85°C with a spinning velocity of 30 m/min with use of an aqueous precipitation bath containing 20 % by mass NMMO. A spinneret having a hole distance of 0.6 mm and a hole density of 2.77 mm^{-2} was used. The air gap was narrowed so far until a distinct negative influence was observed. This was detected when reaching a gap width of 6 mm and became visible inter alia by disturbing the spinning process by beginning turbulences which finally resulted in the break of individual capillaries. The fibres obtained at this gap width were subjected to textile physical tests after having been completely washed, prepared and dried at 100°C. In addition a carding was carried out, and the fibre sticking points occurring therewith were counted. The results are summarized in the Table.

Example 1

A condensate of 1 mole isotridecylalkohole (ITDA) and 10 moles ethyleneoxide (EO) as a non-ionogenic tenside was added to the spinning bath of the comparative example 1 in a concentration of 10 ppm by mass. The spinning was carried out under the same conditions as in the comparative example 1. It was shown that the gap width could be further decreased. The minimum adjustable gap width was detected to be 3 mm without impairing the spinning process.

Example 2

The procedure was the same as in example 1 with the exception that the ITDA/EO condensate was added in an amount of 30 ppm by mass based on the solution, when preparing the solution. Compared with the tenside-free operation the critical minimum distance between spinneret and bath surface could be likewise decreased from 6 mm to 3 mm.

Example 3

The procedure was the same as in example 1 with the exception that the distance of the spinneret from the surface of the precipitation bath was retained at 6 mm as in the comparative example 1. The obtained fibres were completely washed out, prepared, dried at 100°C and subjected to the same tests as the fibres of the comparative example 1. The found numerical data are listed in the table.

From the comparison of these numerical values with those of the comparative example 1 can be seen that the uniformity of the textile physical properties which is reflected by the respective variation coefficient increases by the addition of the tenside. The advantage of the process of the invention can be at best recognized by the increase of the loop tenacity. While fibres with a loop tenacity of the value 0 could be detected with fibre samples of the comparative example 1, such values were not found with fibres of this example. This has consequences to the average value of the loop tenacity and also to the variation coefficient. The improvement of the product properties achieved by the process of the invention can be also recognized by the number of sticking points of the carded materials.

Comparative example 2

A 13% cellulose solution in N-methylmorpholine N-oxide monohydrate was spun with a spinning velocity of 36 m/min from an aqueous precipitation bath containing 25 % by mass NMMO. A spinneret with a hole distance of 0.3 mm and a hole density of 11.1 mm^{-2} was used. The air gap was decreased until a distinct negative affect began. This was found at an air gap width of 6 mm and was shown by temporarily sticking several capillaries to each other and troubles of the spinning process due to beginning turbulences which finally resulted in breaking of individual capillaries. The same tests were carried out with the spun fibres as in the

comparative example 1. The results are listed in the Table.

Example 4

The procedure is the same as in the comparative example 2 with the exception that 50 ppm by mass dimethyldioctadecylammonium chloride (DMDDAC) was added as a cationic tenside. The spinning was carried out under the conditions specified in comparative example 2 with decreasing the width of the air gap. The adjustable minimum gap width at which impairing the spinning was not yet observed was found to be 4 mm. The spun fibres were subjected to the same tests as in comparative example 2. The results are quoted in the Table.

Comparative example 3

An 11% cellulose solution in NMMO-MH was spun with a spinning velocity of 30 m/min from an aqueous precipitation bath containing 30 % by mass NMMO. A spinneret with a hole distance of 0.6 mm and a hole density of 2.77 mm^{-2} was used. The air gap was so far narrowed until a distinct negative effect began. This was detected when the width of the air gap was 8 mm, and was shown by troubles of the spinning procedure due to turbulences which finally resulted in the break of particular capillaries. The same tests as in the comparative example 1 were carried out at the fibres not yet affected. The results are listed in the Table.

Example 5

The procedure was the same as in the comparative example 3 with the exception that 50 ppm by mass sodium salt of dodecylbenzene sulfonic acid (DDBSS) as an anionic tenside was added to the spinning bath. The width of the air gap was continuously decreased during the spinning. The minimum adjustable gap width at which the spinning process was not yet affected was found to be 4 mm. The same fibre tests as in the comparative example 3 were carried out. The results are quoted in the Table.

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TABLE

Parameter,	Unit	Comp. Example 1	Example 3	Comp. Example 3	Comp. Example 2	Example 4	Comp. Example 3	Example 5
Tenacity, dry	cN/tex	41,2	43,8	41,0	41,0	42,9	43,6	45,3
Variation coefficient %		20,4	13,6	18,3	18,3	11,5	20,3	10,5
Tenacity, wet	cN/tex	34,2	35,3	33,2	33,2	34,8	36,2	37,4
Variation coefficient %		22,8	14,8	20,8	20,8	12,3	16,5	16,0
Elongation, dry	%	14,3	14,2	13,7	13,7	14,0	14,0	14,6
Elongation, wet	%	15,8	15,3	14,8	14,8	15,2	14,9	15,2
Loop tenacity	cN/tex	12,7	14,6	13,5	13,5	15,6	12,5	14,2
Variation coefficient %		26,6	14,8	21,0	21,0	13,5	19,6	11,5
Counted sticking points per 500 g carded material		13	4	14	14	6	12	7

ABSTRACT

Process for producing formed cellulosic articles, particularly fibres and filaments, comprising a) dissolving cellulose in an aqueous solution of a tertiary amine oxide, especially N-methylmorpholine N-oxide, and b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said cellulose solution and/or said precipitation bath containing a tenside, characterized in that in the step b) the tenside content c of the cellulose solution and/or of the precipitation bath is in the range $100 \text{ ppm} > c \geq 5 \text{ ppm}$, and the width of the air gap is in the range from 2 to 20 mm. With this process the air gap width can be considerably reduced without deterioration of the properties of the fibres/filaments.

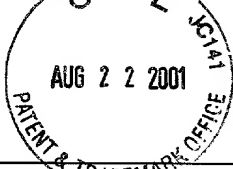
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That which is claimed is:

1. A process for producing formed cellulosic articles, particularly fibres and filaments, comprising:
 - a) dissolving cellulose in an aqueous solution of N-methylmorpholine N-oxide, and
 - b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said cellulose solution and/or said precipitation bath containing a tenside, characterized in that in the step b) the tenside content c of the cellulose solution and/or of the precipitation bath is in the range $100 \text{ ppm} > c \geq 5 \text{ ppm}$, and the width of the air gap is in the range from 2 to 20 mm.
2. The process according to claim 1 wherein the tenside content c is in the range from 8 to 70 ppm.
3. The process according to claim 1 wherein the tenside content c in the cellulose solution is in the range $70 \text{ ppm} > c \geq 30 \text{ ppm}$.
4. The process according to claim 1 wherein the width of the air gap is in the range from 2 to 8 mm.
5. The process according to claim 1 wherein the distance of the solution jets from each other at the exit of the extrusion die is in the range from 0.22 to 0.7 mm.
6. The process according to claim 1 wherein the tenside is added to the cellulose at a time selected from the group consisting of before the stage a), in the stage a), and between the stages a) and b).

7. The process according to claim 1 wherein the tenside is added to the cellulose at a time selected from the group consisting of in stage b), and after the stage b).
8. The process according to claim 1 wherein a non-ionogenic tenside is used.
9. The process according to claim 1 wherein the precipitation bath from the stage b) is regenerated to a purified aqueous amine oxide which is reused in the stage a).
10. The process according to claim 9 wherein the tenside is separated from the amine oxide solution in the course of the regeneration of the precipitation bath, and is reused in the stage b).
11. The process according to claim 1 wherein the cellulose solution is extruded through a die having a hole density in the range from 1.8 to 20 mm⁻².
12. A process for producing formed cellulosic articles, particularly fibres and filaments, comprising:
- a) dissolving cellulose in an aqueous solution of a tertiary amine oxide, and
 - b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said cellulose solution containing a tenside in a range from about 10 ppm to about 50 ppm.
13. The process according to claim 12 further comprising a tenside in the precipitation bath.
14. The process according to claim 12 wherein the width of the air gap is in the range from 2 to 20 mm.

15. The process according to claim 12 wherein the tertiary amine oxide is N-methylmorpholine N-oxide.
16. A process for producing formed cellulosic articles, particularly fibres and filaments, comprising:
- a) dissolving cellulose in an aqueous solution of a tertiary amine oxide, and
 - b) extruding the cellulose solution through an extrusion die via an air gap into a precipitation bath with precipitation of the formed articles, said precipitation bath containing a tenside,
characterized in that in the step b) the tenside content of the precipitation bath is in the range from about 10 ppm to about 30 ppm.
17. The process according to claim 16 wherein the width of the air gap is in the range from 2 to 20 mm.
18. The process according to claim 16 wherein the tertiary amine oxide is N-methylmorpholine N-oxide.



ALL 3 US

PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

ATTORNEY DOCKET NO. 4197-102

As a below named inventor, I hereby declare that:

My residence/post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR PRODUCING CELLULOSIC FORMS

the specification of which is attached hereto unless the following box is checked:

(X) was filed March 14, 2001 as US Application Serial No 09/787,314 or PCT International Application

Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119(a-d) or 365(b) of any foreign application(s) for patent or inventor(s) certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U.S.C. 119
Germany	198 42 557.0	September 17, 1998	YES: <u>X</u> NO: _____
PCT	PCT/DE99/02977	September 14, 1999	YES: <u>X</u> NO: _____

Provisional Application

I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below:

U.S. Priority Claim

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION SERIAL NUMBER	FILING DATE	STATUS(patented/pending/abandoned)

POWER OF ATTORNEY:

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) listed below to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Steven J. Hultquist, Reg. No. 28021

Marianne Fuierer, Reg. No. 39983

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Inventor's Signature

Date

ALC-3 / US

DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION (continued)

ATTORNEY DOCKET NO. 4197-102


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☒ 
Inventor's Signature

☒ 29.06.2001
Date

Full Name of Inventor: _____

Citizenship: _____

Residence: _____

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Inventor's Signature

Date

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